



# **SURFACE TREATMENTS OF METALS**

**The company BSL Industrie a.s.** is active in the field of plastic coating of machine parts and components for the industry, as well as in the development and production of plastic protective coatings and layers, plastic covers and plastic coating of metal parts according to customer requirements, using the following technologies: a dip coating technology (PVC plastisols), fluidized bed (PE, PA), electrostatic and flame spraying of the powder thermoplastic.

Our company is equipped with advanced technology which is certified, and is running its production in modern premises. The company has implemented the quality management system which follows the European and international standards.



# POWDER PAINTING KOMAXIT

Behind this term lies the coating of metals with powder plastic polyester colours that are applied to suitably semi-made-up metal (galvanized, degreased with phosphating) by means of electrostatic spraying. The coating is then baked at specific temperature and for specific time. Using different types of powder, time and temperature we are able to have a matt or a glossy coating including various range of surface designs and colours.

## Powder plastic surface treatment and its advantages

- High quality of surface treatment
- Uniform surface treatment layer (free from stains, surface defects, non-uniform coating, etc.)
- Environmentally friendly
- Suitable also for food purposes (no harmful chemical substances)
- High lifetime depending on the purpose of use

## Application

- Metal fencing
- Household appliances
- Handrails and building constructions
- City and street furniture
- Wire programme
- Automotive parts





# POWDER PAINTING THERMOPLASTIC

Thermostatic metal coating is based on modified polyolefins and polyamides, and can be used for a soft steel, aluminium and galvanized steel. To apply this kind of painting is used the electrostatic spraying.

## Basic characteristics

- Coating thickness: 200 – 750  $\mu\text{m}$
- Wide range of colours
- Environmentally friendly: no content of VOC, TGIC, plasticizers, isocyanate, halogens, and heavy metals
- Full resistance to UV: an attractive finish, colour and gloss are retained for the entire decade
- Intended to be used also in the marine environment: long-life resistance to the salt, seawater, sand and the sun
- Hygienic: no fungi growth
- Resistant surface: impact resistant and graffiti-resistant
- Easy to apply: any ground coat is not required. Ideal solution is there are sharp edges and welds
- No cracks, no flaking of the coat
- Very good electric insulator
- Resistant to acids

# DIP PLASTIC COATING

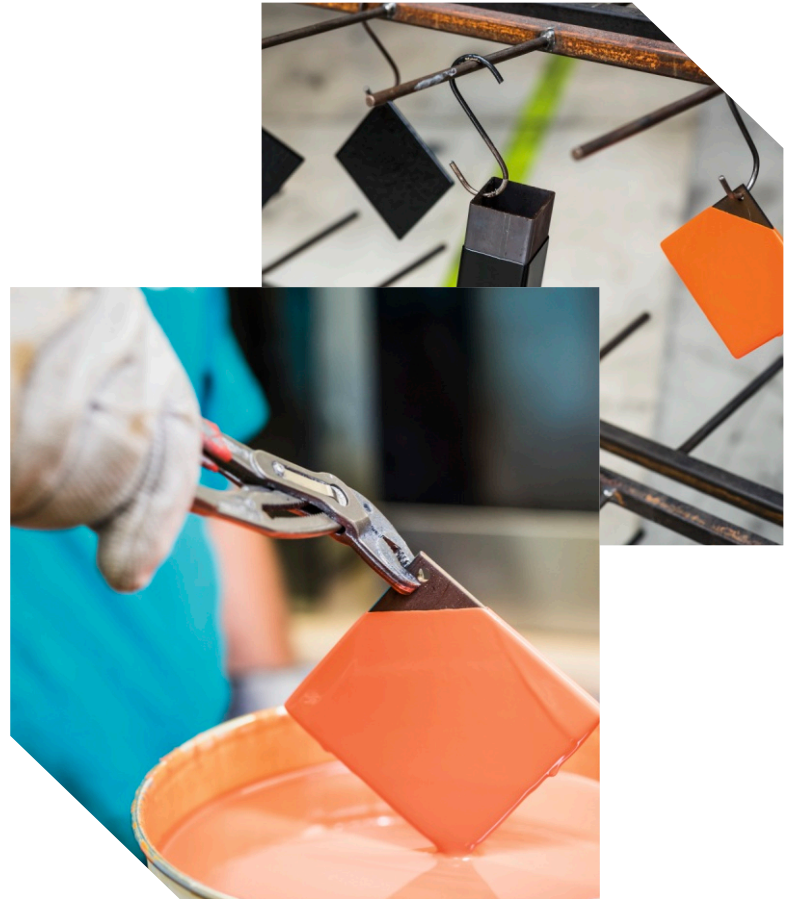
Coating of metal parts is performed with PVC pastes of our own production i.e. the plastisols, in these colours: black, gray and white. Other shades are made to order.

Plastic coating is made as follows: a warmed up metal part is dipped in the bed with the plastisol, then it is baked in the furnace for a specific period and at specific temperature. These plastic coated parts are mainly intended to be used in the field of industry, and are not intended to be in contact with the food and drinking water.

Thickness of the PVC layer is determined especially upon the type and thickness of the metal, and usually may be of 400  $\mu\text{m}$  – 2 mm, a gelatine hardness measured with a Shore hardness meter makes usually, upon the type of a paste used, 50 – 70 ShA.

On customer request is possible to coat the surface of a metal part with an adhesive painting which ensures a perfect adhesion of the PVC plastisol layer after gelatinisation process.

Recommended temperature of the environment for the products with a PVC gelatine layer is: max. +80 °C.



# PLASTIC COATING IN FLUIDIZED BED

Coating of the pre-heated and degreased metal parts with thermoplastic polyolefinic powder upon the customer's request, are intended to be used in the industry, food industry, power industry and automotive industry. The products which were coated this way are resistant to corrosion, chemicals, salts, climatic influences, whether conditions and UV radiation. This kind of surface treatment may have a coating thickness of 200 – 750 µm, depends on steel type and thickness.

## Weather resistance

The products coated in fluidized bed with a thermoplastic powder are resistant to corrosion, chemicals, salts, pollution from the air and weather conditions. The thermoplastic perfectly adheres to the metal, is typical of good electrical insulating characteristics, resistant to abrasion, resistant to UV radiation.

## Adhesion of a PVC layer

Thanks to its content the coating is typical of excellent metal adhesion characteristics.

Tensile strength (ISO 527-1,-2)\*\* 5 Mpa      Melting temperature (ISO 3146) 110 - 115 °C

**Specific weight**      In accordance with a colour shade: 0.915 – 0.935 g.cm-3

**Coating hardness**      Shore D (ISO 868) 49

## Thermal stability

A manufacturer of the thermoplastics states the following temperature -40 °C up to +82 °C

## Resistance to UV radiation

Max. 10 years. Thermoplastic coatings contain neither heavy metals nor volatile substances (VOC free). Found to be suitable for the contact with the food.

\* data valid for the coating of 350 µm which were applied to the metal under standard conditions, with the width 3 mm

\*\* the value of char. adhesion of the coating is missing, however, this is referring to the value at which the layer of a coating applied is divided



# GLADIATOR - MOBILE PLASTIC COATING

Another type of metal structures surface treatment providing a protection against the corrosion, whereas the coating can be applied by a flame spraying of the thermoplastic powder. Durable adhesive coating can be applied to outer structures of soft steel, galvanized steel, aluminium, wood, concrete, etc. Especially, the application is suitable for larger structures and constructions which are fixed or the dis-assembly of which would be too difficult, and which are facing unfavourable weather conditions, seawater, pollution from the air, and chemical corrosion.



## Typical characteristics of the coating

The following data are related to the coating of 350 µm, whereas the coating was applied under usual conditions to steel or aluminium base of 3 mm width. The pre-treatment means the jetting, if not stated otherwise.

### Recommended thickness of the coating

300 - 900 mikronů

### Appearance

Flat/Glossy

### Gloss

ISO 2813

Flat/Glossy

### Impact resistance

Gardner (a falling weight impact tester) ISO 6272

Direct 23 °C

Indirect 0 °C

2,7 Jouls

18,0 Jouls

### Abrasion resistance

Taber ASTM D4060/84

H18, 500 g loading, 1000 cycles

weight loss 60 mg

### Saline mist

ISO 7253

Steel - Channelled

Aluminium - Not Channelled

- Channelled

- Not Channelled

Results after 1,000 hours

Loss in adhesion is lower than 10 mm from a channel

Corrosion under the film of 2-3 mm

Without any loss in adhesion

Without any loss in adhesion

Without any loss in adhesion

### Resistance to chemical substances \*

- Dilute acids 60 °C

- Dilute hydroxides 60 °C

- Salts (except for peroxides) 60 °C

- Solvents 23 °C

Good

Good

Good

Weak

### Adhesion

PSL, TM 19 A-1

### Climatic testing

QUV ASTM G53-77

2,000 hours - No significant change in colour or gloss loss

3 years - No significant change in colour or gloss loss

### Combustion characteristics

Florida 45° south-oriented

BS476: Pt5: 1979

### Inflammability

Coating thickness 500 µm

### Surface flame spread

BS476: Pt7: 1979

Coating thickness 500 µm

BS476: Pt6: 1989I = 0,2

Coating thickness 500 µm

UL94

P - not easily inflammable

Class 1

### Flammability

Vo (See also Characteristics of the material)

### Safe working temperature

Of the air, continuous

Max. 60 °C



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